

to assert its independence, when text-books designed to meet our own peculiar requirements shall be written by native authors. Meanwhile let the choice of books for translation be confined to those that are sound and good, let us guard jealously against any tendency to a *saprophytic* habit, with its attendant degeneration; the translation of an unsound text-book may be regarded in a sense as marking a saprophytic tendency, and the appearance of the translation of this book of Dr. Behrens is perhaps the first indication of such a saprophytic habit.

Lastly, would it not be possible, and much more advantageous, to transmute the energy now devoted to translation into original production? It is admitted that a teacher acquires both facility of exposition and clearness of view by writing down his ideas in the form of a text-book. It is for us to see that we do not continue our "healthy symbiosis" unduly, and thereby lose that power of original exposition for which so many English men of science have been properly celebrated.

II. The second work under review is a translation of a book by the same author, and it is one of those works now being produced in rapid succession which aim at assisting the student in his practical work in the laboratory. The keynote is struck by the following passage from the preface to the German original: "For a work to be useful in those microscopical inquiries which are most important in the botanical laboratory, it need teach neither optics nor histology." It may fairly be admitted that within the cover of this book the student will find clearly laid before him all that it is essential he should know of the theory and structure of the modern microscope, together with useful instructions as to the methods and reagents in use in the botanical laboratory. Dr. Behrens boldly challenges criticism in his preface, when he says "the chapter of this work which deals with the microscopical investigation of vegetable substances furnishes an *exhaustive* treatment of these matters." Whatever may be our opinion as to the correctness of this statement it must be allowed that the work now before us is the result of an earnest effort, and represents wide and laborious sifting of a scattered literature not easily accessible to most students. There is quite a pathetic ring in one sentence in the preface; referring to the literature of the subject in the University Library at Göttingen, the author says: "With hardly a noteworthy exception, I have seen and read it all." It is only those who know how voluminous and how scattered are the writings on this subject who can form an idea of the magnitude of this task.

The first two chapters, dealing with the microscope and microscopical accessories, have been subjected to considerable alteration and extension by the editors. Naturally German stands and objectives are not so accessible in America as those made on the spot; the editors have devoted considerable space to the description and illustration of the microscopes of American manufacture, so that this part of the book partakes, both in appearance and contents, of the character of an optician's catalogue. A few paragraphs have been added on the subject of "nose-pieces;" but there is no mention of that invaluable nose-piece of Zeiss which is calculated to save the time of workers in no small degree—viz that which

can accommodate four objectives, and on which the tubes carrying the objectives are cut of such length as to bring each in turn approximately into focus: the value of this arrangement is obvious.

Chapter III. contains useful directions for the preparation of microscopic objects, cutting sections, mounting, drawing, &c. The most important part of the book, and that which will assuredly be the most generally useful, is that comprised in the last 200 pages, and it is almost a matter of regret that this latter half has not been published separately from the first 260 pages, which have an interest chiefly for the beginner, while for the advanced student they will be little better than lumber. Pp. 267-311 are devoted to the enumeration and preparation of micro-chemical reagents, while Chapter V. deals with the microscopical investigation of vegetable substances. It is to be noted that no reference is made to the inventor of chlor-iodide of zinc beyond his name, which, according to the notice of the meeting at which his solution was first described ("Flora," 1850, p. 643), is spelt "Schulze" not "Schultz" as it stands in the text. There is no mention of the demonstration of protoplasmic continuity, even in sieve tubes, nor is the substance of the "callus" of sieve tubes or its reactions described. These omissions do not greatly affect the value of the book; they would not have been mentioned had not Dr. Behrens professed to give us an "exhaustive" treatment of the subject. One chief merit of the work is that copious references are given to the sources from which Dr. Behrens has drawn his information; this will greatly add to its usefulness, and the translation may be accepted as a valuable addition to the laboratory handbooks already before the English-speaking public.

F. O. B.

RUSSIAN CENTRAL ASIA

Russian Central Asia, including Kuldja, Bokhara, Khiva, and Merv. By Henry Lansdell, D.D. (London: Sampson Low and Co., 1885.)

DR. LANSDELL, already favourably known to the public by his interesting volumes "Through Siberia," gives in the present work a mass of information on a subject to which the attention of Englishmen has of late been perforce directed—the Russian dominions in Central Asia. In the two goodly volumes recently published he gives the narrative of a journey undertaken in the year 1882, in the course of which he traversed Kuldja, Bokhara, Khiva, and Merv. Turkistan has been rarely visited by Englishmen, and, as Dr. Lansdell believes, in certain parts he may claim to be the first. The principal object of his journey was a philanthropic one—the distribution of religious literature, especially in the prisons of the Russian empire; but in writing this book he has kept in view the requirements of students as well as of general readers, providing for the former by touching upon the "geography, geology, fauna and flora, the characteristics of the people, their government, language, and religion"—to which not only numerous notes but also whole chapters are devoted, as well as "appendices, derived from works only published in the Russian language, which treat on the fauna and flora of Turkistan."

It would be impossible in the space to which this notice must necessarily be restricted to give an adequate

idea of the great amount of matter which Dr. Lansdell has collected in these two volumes, so that we must content ourselves with a brief glance at a few of the more salient features.

To geographers the account of the Thian Shan Mountains will be among the subjects of interest. These mountains, estimated by Réclus as forming a mass twenty-five times larger than the Swiss Alps, and a protuberance on the earth's surface larger than the united mountains of all Europe, begin in Mongolia, and develop by the addition of successive ridges until they occupy from north to south above eight degrees of latitude. The heights of the several ranges vary from about 10,000 to 14,000 feet above the sea, and in the Pamir range exceed 15,000. The number of glaciers exceeds 8000. The principal lakes are the Alakul, the Balkash, and the Issikul, the waters of which are brackish; the first and second are believed to have once been connected. Volcanoes have been stated to exist in the Thian Shan, but this appears to be incorrect. Much information of interest is given about the Ili Valley, a meeting ground of the Tatar and Mongol races. From this region Dr. Lansdell diverged eastwards from the course of his journey to reach Kuldja, a town within the Chinese frontier, for some time in Russian occupation. He then continued his journey in a westerly direction, passing through Semirechia, of which region he gives many particulars of interest, dwelling especially on the patriarchal life of its nomad inhabitants. From the Kirghi Steppe he passed into Turkistan. The climate of portions of the Aralo-Caspian region does not appear inviting: the summer temperature is from 68° to 77° F., the winter from 5° to 23°. In the lowlands rain falls rarely in summer, and in only a small amount at any season. Hence there is a general desiccation. The beds of tributary rivers are dry; the main streams lose themselves in sands or terminate in brackish marshes; the smaller lakes have evaporated, leaving behind them beds of salt; the larger are much reduced in size. The land is barren; trees are scarce; vegetation is stunted, and limited in its species. The geology, as might be supposed, has not been exhaustively worked, but from a small work of M. Mouchketoff the author has obtained an outline, from which it appears that in one part or another of the district almost every formation, from the oldest to the newest, is represented, and that the mountain-chains consist largely of igneous rocks.

Dr. Lansdell spent some days in Bokhara, which town no English traveller had visited since the time of Wolff's adventurous journey. The fear of the Russian is, however, now upon this people, and he appears to have met with little difficulty, though subjected to some surveillance. On his way to the city he visited the Emir, then at Kitab, and had a gracious reception. The description of the author's invention of a court costume for the ceremony of presentation is amusing: the chief components were a cassock, a D.D. hood, some masonic jewels, and a square college cap. From Bokhara Dr. Lansdell travelled through Khiva, and thence by a rarely-traversed route, which, after following the general direction of the Abu-Daria for some distance, runs in a west-south-westerly direction to Krasnovodsk, near the Karaboghaz Bay of the Caspian. Thence he returned to England,

having accomplished in 179 days a journey of 12,000 miles—laborious, with considerable hardships, and not without some danger, though the Russian influence has rendered many places, formerly all but inaccessible, comparatively safe.

Dr. Lansdell does not profess to be a scientific traveller, but he is a careful observer, noting with an experienced eye the physical peculiarities of the regions through which he travelled; and he has been at immense pains to gather together a large mass of information concerning the flora, fauna, and ethnology of Central Asia,¹ which has been to a great extent accumulated by Russian men of science, and which, from being written in their language, is practically inaccessible to most Europeans. The appendices on the flora and fauna of Russian Turkistan occupy 148 pages of rather small print, and there is in addition a very full bibliography of the same district which extends to twenty-five pages. But much information, both from books and from personal observation, is also incorporated into the narrative of travel. Dr. Lansdell's picture of the desiccation of the western part of Bokhara, of the moving sands between the Oxus and the Karakul, of the "barren and dry land" of the Aralo-Caspian region, and of the Karaboghaz Gulf—a great area of evaporation which, should any physical change close its narrow and shallow communication with the Caspian, would soon become one vast salt-pan—cannot fail to interest the student of physiography. In a word, the ethnologist, geologist, and naturalist will find these volumes not only very pleasant reading, but also most valuable for reference.

OUR BOOK SHELF

Bulletin of the Bussey Institution. Vol. II., 1884. (John Allyn, 30, Franklyn Street, Boston, U.S.)

THE *Bulletin* of the Bussey Institution has many claims to be considered as original in its design and in the character of its reports. It contains a large amount of information upon out-of-the-way topics, mostly treated upon from the chemical side, and in all cases communicated by Prof. F. H. Storer, Dean of the Institution, and Professor of Chemistry.

The Bussey Institution is apparently a branch of Harvard University, having special endowments, and its objects comprise the teaching of young men intended to become practical farmers, land agents, gardeners, florists, or landscape gardeners.

The investigations conducted by Prof. Storer, reported in the *Bulletin* before us, are highly interesting to such students, and are characterised by a keen practical bias. The first paper is devoted to results of analysis of the leaves of *Rumex crispus* and the common milk-weed (*Asclepias cornuti*), with a special view to their economic value. The second paper is upon an ingenious plan of ascertaining the rate at which various fertilisers may be scattered by hand, or, in the Professor's own language, "about how much of a given fertiliser would a man naturally throw from his hand in sowing an acre of land?" Surely no learned professor ever set himself a more homely task! Next we find "Experiments on Feeding Mice with Painters' Putty and with other Pigments and Oil." This is almost revolting, and raises a feeling of pity for the mice, together with a certain sense of loss of appetite on the part of the reader if he is indulging in an ante-prandial study of scientific novelties. Mice, however, do eat putty, and, more curious still, red lead

¹ See an article by Dr. Lansdell, *NATURE*, May 27, p. 56.